BPISAE
RESEARCH ACTIVITIES

PLEASE CIRCULATE TO ALL INTERESTED EMPLOYEES OF THE BUREAU

PLANT INDUSTRY STATION, BELTSVILLE, MD. OCTOBER 1949

FOR ADMINISTRATIVE USE ONLY

Housing Research to be Expanded

Bureau research in farm housing will be considerably expanded under the Housing Act of 1949.

Although Congress had not appropriated funds to put the program in operation when this copy of BPISAE RESEARCH ACTIVITIES was written, Secretary Brannan has transferred to Agricultural Research Administrator Cardon "all authorities, powers, functions, and duties for conducting research and technical studies" under the Act.

These include "development of building plans and specifications for adequate farm dwellings and other farm buildings, improving the architectural design...utilizing new and native materials, economies in materials and construction methods, new methods of production, distribution, assembly, and construction with a view to reducing the cost ... and adapting and developing fixtures and appurtenances for more efficient and economical farm use."

The Division of Farm Buildings and Rural Housing and the Bureau of Human Nutrition and Home Economics will conduct this research in cooperation with State Experiment Stations. The Bureau of Agricultural Economics will make surveys to determine the need for and progress toward improvement in farm housing. The Extension Service will furnish technical assistance to farmers other than those receiving loans under the Housing Act. The Farmers' Home Administration will supervise construction and other services to farmers receiving loans or grants under the act.

Assistant Secretary Knox T. Hutchinson has been given responsibility for coordinating the policies and activities of all agencies in the Department concerned with the expanded program.

Round-up on Study of Grain Seed Irradiated by Bikini Bomb

A number of questions have been answered on how intense radiation affects grain seed in an experiment conducted by Bureau and State Experiment Station scientists in cooperation with the Naval Medical Section, Joint Task Force CNE, Operation Crossroads.

Dr. L. J. Stadler, Dr. L. F. Randolph, and Dr. M. T. Jenkins made the plans for testing various kinds of biological effects of bomb-created radiations on cereals for the Bikini experiments. Dr. G.A. Wiebe and Harland Stevens--- with the assistance of Dr. D.W.Robertson of the Colorado Station--selected the barley varieties to be used and collected the samples. Seed for comparison with the bomb irradiated seed was X-rayed in Dr. Stadler's laboratory. R.W.Leukel tested the effects of the radiations on germination and seedling growth. Mr. Stevens planted the material under study at Sacaton, Ariz., using land and facilities provided by R.H. Peebles. Dr. Luther Smith, Washington State Experiment Station at Pullman made the macroscopic and cytological observations on the plants grown at Sacaton. He also determined the mutation frequencies.

A comparison of the effects of radiation from the Bikini atomic bomb explosion and from X-rays on seeds of barley, wheat, and oats indicate:

(1) Irradiation from either source had very little effect on germination and seedling growth except to cause mottling in the first seedling leaves.

(2) In barley plants from the seed, the mutations were much the same type from each source but the bomb irradiated material showed a 15-fold increase in frequency of mutation as compared with a 10-fold increase in X-rayed materials.

(3) High but not strikingly different frequencies of seedling mutants from the bomb and X-irradiated durum wheats.

(4) A considerable frequency of mutants of the banded shrivel type in common wheat. In these the leaves developed transverse zones of necrotic brown tissue separated in the early stages by bands of normal green tissue.

(5) A surprisingly high frequency of chimeras (mixture of tissues of different genetic constitution in the same part of the plant) from irradiated seeds of durum wheat. Seven plants from bomb-irradiated seeds and three from X-rayed material had distinct chimeras of off-color tissue. No chimeras were found in the control populations. Three barley plants with distinct and one with a faint chimera came from the bomb-irradiated seed. Only one distinct chimera was found in barley plants from X-rayed seed and none appeared in the control plants.

(6) The frequency of interchanges (the break-up of chromosomes and the re-attachment of the pieces resulting in deformed and usually sterile plants) was higher in X-rayed than in bomb-irradiated material.

Mechanization on the Small Cotton Farm

Will mechanization pay on the average Cotton Belt farm?

Exploring this question before the 1949 Cotton Mechanization Conference, Dr. Charles R. Sayre, new head of the Division of Cotton and Other Fiber Crops and Diseases, says the answer depends to a large extent on research and guidance.

Opportunities for profitable mechanization are readily apparent on large commercial cotton holdings and Dr. Sayre sees rapid shifts away from hand labor on these farms. On the typical small farm, however, mechanization is not likely to pay under the present system of production. The farm with a land basis of 30 crop acres, 5 in cotton, does not have the economic capacity to support a family and to meet the cash costs of tractor farming.

Without guidance many families plunge into mechanization with a "swim or drown" approach. Dr. Sayre sees a challenge to leadership in the implement industry, farm organizations, the Land Grant Colleges, and the Department to develop a sound approach to this problem. In his opinion we need research to develop farming systems and management practices that make efficient use of tractors and equipment on family farms, both large and small. One of the immediate needs is the development of small tractors with sufficient power to turn and work down clay soils and to make effective use of the combine and other harvesting equipment. Another pressing need is for research in financing systems that protect both the farmer and the dealer.

Mechanization must be regarded as a part of the new foundation for the South's bright future in which the greater efficiency and resources development will mean returns to land, labor, capital, and management in the South comparable to those received in other agricultural areas and in other industries.

ON THE CALENDAR

Oct. 24-27	Soil Science Society of America, American Society of Agronomy
Oct. 26-28	American Society of Horticultural Science

all three at Milwaukee, Wisc.

Farm Building Plans

The revision of the Northeast Plan Exchange is completed and brown-line prints of working drawings for the 103 farm service building plans are now available to state colleges in the Northeast Region. J. R. Dodge, Division of Farm Buildings and Rural Housing, attended a meeting of the Northeast Plan Exchange Committee held at State College, Pennsylvania, September 7-9 in conjunction with the North Atlantic Section meeting of the American Society of Agricultural Engineers. The committee made final decisions on the inclusion of drawings in the new catalogue now being prepared for the printer. Only 3 plans will be used as they appeared in the old catalogue issued in 1937 as Miscellaneous Publication 278, Plans of Farm Buildings for Northeastern States. Twenty-eight of the plans have been extensively revised to incorporate modern features, and 72 are entirely new.

In addition to the 103 farm service buildings, the Northeast Plan Exchange includes 15 new farmhouse plans developed cooperatively by the State Colleges and Extension Services of the Region, the Bureau of Human Nutrition and Home Economics, and the Division of Farm Buildings and Rural Housing. Most of these plans are adapted to either frame or masonry construction by means of alternate detail sheets, and complete alternate working drawings for concrete masonry construction are available for six. The houses are illustrated separately in Miscellaneous Publication 658, Farmhouse Plans for Northeastern States, issued December 1948.

Congo, A New Shipping Watermelon

Introduction of Congo, a high quality, anthracnose resistant, good shipping watermelon, is announced by the U.S. Vegetable Breeding Laboratory at Charleston. Several thousand pounds of seed will be available from commercial firms for the 1950 season.

The name, Congo, symbolizes the melon's background. The resistance to anthracnose was obtained from a melon supplied by the Rev. Rush F. Wagner of the Old Umtali Mission, South Africa. This was crossed with Iowa Belle at the Iowa Experiment Station. Later a selection from this cross went to the Florida Agricultural Substation at Leesburg, where it was inbred for several generations. The inbred line was sent to the Laboratory at Charleston in 1941. There it was crossed with the Garrison variety by C.F. Poole, a former member of the staff. The Congo variety was produced in several generations of selection from this cross.

Congo resembles the Garrison (Coker) variety generally in shape, size, and quality, but it is of a distinctively darker green color. A tough rind and firm flesh that reduce breakage make it a good shipping melon.

Extensive field and shipping tests indicate immediate popularity of Congo as a dependable commercial variety in Florida, Georgia, and South Carolina and probably elsewhere.

Engineers Help CCC

Three agricultural engineers of the Division of Farm Buildings and Rural Housing are serving in a group set up to assist the Commodity Credit Corporation with technical advice on the new grain storage program. They are Benton M. Stahl, Ames, Iowa; Leo E. Holman, Urbana, Ill.; and George H. Foster, Lafayette, Ind. Head of the group is Dr. H. J. Barre of Purdue. Other members from State Experiment Stations are C. K. Otis, Minnesota, K. B. Huff, Missouri, G. M. Petersen, Nebraska, and J. O. Curtis, Illinois.

This group will provide technical advice on problems arising in the fabrication and erection of the more than 50,000 buildings that the CCC is buying for corn storage at some 1,200 bin sites through the Corn Belt. The buildings will hold more than 280 million bushels of shelled corn. Where needed factory inspection will be part of the agricultural engineers' service.

On recommendation of the engineers, the CCC is installing cooling equipment in many of the large storage buildings of the quonset and industrial types. More than 2,500 of the buildings are 32 by 96 feet or larger. In many of these ventilating ducts will be placed for cooling purposes only. A suggested type of duct will be of concrete blocks laid without mortor and covered with wood planks. Exhaust fans with a capacity of 6,000 cubic feet per minute will draw air through the shelled corn when the average outside air temperature is 10° F or more below the grain temperature. This cooling will retard chemical changes, insect activity, and movement of moisture.

The engineers have also recommended that steel bins of 18-foot diameter be equipped with ventilated floors. On these, corn above safe moisture content can be dried by forced ventilation with heated air.

Same Fungus Causes Anthracnose of Lupine and Peach

A serious need for a variety of blue lupines resistant to anthracnose is indicated in findings by Dr. James L. Weimer (FC&D) and J. C. Dunegan (F&VC&D) that the same strains of fungus Glomerella cingulata cause anthracnose on blue lupine and on peaches.

The investigations, conducted in cooperation with the Georgia Experiment Station, show that anthracnose on lupines left for seed and harvested in late May or early June provides a source of infection of the peaches. The result is loss of fruit in the orchards, in transit, and on the market. Conversely anthracnose-infested peaches left in the orchard in July may serve as a reservoir for infesting the lupine crop planted in the fall.

These observations indicate the possible difficulties in using blue lupines as a winter crop in peach orchards.

Losses of Red Clover Stands Traced to Fusarium

Evidence that loss of red clover stands in Pennsylvania frequently results from root rot caused by species of Fusarium is reported by Dr. K. W. Kreitlow (FC&D) and R. G. Hanson, a graduate student at Pennsylvania State College. The investigations were conducted cooperatively by the Pasture Research Laboratory and the Pennsylvania Station.

Apparently the fungus enters the crown and root of the host plant through wounds made by insects or other causes. In greenhouse experiments, healthy plants inoculated with cultures of Fusarium from diseased and dead plants of red clover became diseased and died when roots of the young plants were injured during inoculation. Highest infection from Fusarium occurred when soil temperatures was maintained above 30° C. The cultures of Fusarium isolated from red clover were used to inoculate 18 species of Trifolium, 5 species of Medicago, and 4 species of Melilotus. Only T. repens, T. fargiferum, and Melilotus suaveolens were resistant to the Fusarium.

New Potato Has Multiple Disease Resistance

Yampa is a new disease-resistant potato developed and introduced cooperatively by this Bureau and the Colorado Experiment Station. It is the result of 7 years of breeding, selection, and testing by Dr. L.A. Schaal and W. C. Edmundson (F&VC&D) and Dr. R. Kunkel of the Colorado Station.

A medium-early white potato, Yampa is showing resistance to scab, leaf roll, mild mosaic, and early blight as well as some tuber resistance to late blight in the High Plains area.

The new potato is well adapted to light, sandy soils. It shows a tendency to crack when spaced too far in the rows in heavy soils, but this can be corrected by proper spacing and handling of irrigation water.

Yields up to 879 bushels per acre were obtained from Yampa in Colorado. Under dry land cultivation it has consistently out-yielded Bliss Triumph and Irish Cobbler.

Greenhouse for Radioactive Studies Well Underway

Work is progressing rapidly on the new greenhouse and headhouse being built at Plant Industry Station for use in studies with radioactive materials. Most of the concrete and brick work will be completed early in October and the entire structure with retaining wall and anchor fence is to be completed during the winter. It consists of a 100-foot greenhouse, three laboratories for plant work in the headhouse, and space underneath for growth chambers, sample preparation, and storage. Funds for the new building come from the Atomic Energy Commission.

Root Growth of Young Tungs Depends on Activity of Tops of Trees

Dr. M. S. Neff (F&VC&D) offers evidence to disprove a long held assumption that very early spring is the best time to plant young tung trees. This is believed to give the trees a chance to establish a root system prior to top growth and to enable them to make better growth after setting.

In an experiment with one-year-old nursery seedlings, Dr. Neff finds that regeneration and growth of newly transplanted tung trees depends largely on the activity of the tops.

One-year-old nursery seedlings planted after the trunks were removed just above the first branch roots failed to make new roots except in a few cases in which new tops developed.

Trees retaining trunks but with all buds dug out to eliminate normal top activity made slight root growth.

Trees with a ring of bark removed just above the first branch roots so as to hinder normal movement of nutrients produced almost as much top growth as the normal transplants but considerably less root growth.

Zinc Sulfate Corrects Arsenic Toxicity in Peach Orchard

One application of zinc sulfate with high nitrogen fertilization will correct arsenic injury to Elberta peach trees planted in old apple land, report A. H. Thompson and L. P. Batjer (F&VC&D) for the Wenatchee and Yakima districts of Washington.

Arsenic injury is reduced by merely doubling the application of nitrogen ordinarily used. Almost complete correction is obtained by adding 5 pounds of zinc sulfate (25 percent Zn) per bearing tree. Iron sulfate is not so effective as the zinc sulfate. The addition of sulfur in either the high nitrogen or the high nitrogen plus zinc slightly increased the effectiveness of the treatment on alkaline soils but made no apparent difference on acid soils.

The treated trees withstood a relatively high level of absorbed arsenic in the leaves without injury. Indications are that the recovery will be sustained.

Onion Field Days Held

Dr. H.A. Jones assisted State cooperators in a series of onion field meetings held at five locations in Idaho, Utah, Colorado, and Iowa, Sept. 19-26. Designed primarily for seedsmen interested in the hybrid onion work and for experiment station workers interested in onion breeding, the program dealt with hybrids and other breeding material, yield trials, propagation methods, seed cleaning, weed and insect control, and onion storage.

Relation of Soil Fertility to Quality of Feed Under Study

To find whether high soil fertility produces higher quality feed or just more of it, this Bureau is cooperating with the Bureau of Dairy Industry in an experiment that will probably continue for two or more generations of dairy cows. The work, an RMA project, is under the direction of Dr. Lane Moore for BDI and Dr. L. T. Alexander (SMI). Ray E. Ely, who worked on similar investigations at the Michigan Agricultural Experiment Station has joined Dr. Moore's staff.

The investigation will attempt to determine the effect of feed from two levels of soil fertility on reproduction in a selected dairy herd. It will include the rate of conception, the growth of the calves, and the nutritional properties of the milk.

The feed will be grown at the Research Center on 100 acres of land divided in four blocks of 25 acres each. The soil scientists have tested the soils and prescribed the fertilizer and crop rotation. One-third of the land is being planted at high fertility levels, two-thirds at low levels in a rotation of two years of alfalfa, one year of corn, and one year of wheat. The high fertility acreage is expected to produce 80 to 100 bushels of corn, 30 bushels of wheat, and 4 tons of alfalfa to the acre, the low about 35 bushels of corn, 15 bushels of wheat, and 2 tons of alfalfa to the acre. All of the feed will be in the form of harvested material --silage and hay from the alfalfa, grain and silage from the corn, and grain from the wheat. The 20 cows used in this experiment are being selected from equal blood lines. The herd will be held in balance by use of proper sires. As the calves constitute an important part of the study the herd will eventually include 20 calves.

Work Conference at Charleston Lab

Vegetable breeding work in progress in the South and techniques for locating, maintaining, and exchanging materials were discussed at a work conference of staff members and collaborators of the U.S. Regional Vegetable Breeding Laboratory at Charleston, S.C., Sept. 7-8.

About 40 research workers took part. In addition to the official collaborator from each of the 13 cooperating Southeastern States there were one or more vegetable breeders, horticulturists, and plant pathologists from most of the States.

Dr. Sidney H. Yarnell, director of the Laboratory, notes that the work conferences at the Laboratory, held approximately once a year, are coming more and more to serve as a clearing house and technical service agency to the mutual advantage of both State and Federal vegetable breeding programs.

Northern Nut Growers Meet at Beltsville

The Chinese chestnut is well on the way toward becoming an orchard crop in the United States. Recent introduction of three horticultural varieties--Naking, Melling, and Kuling--marked a milestone in this Bureau's research to find a replacement for the blight-stricken American chestnut. Bureau staff members exhibited samples of the new varieties and described other recent findings to members of the Northern Nut Growers' Association in session at Plant Industry Station in September. Dr. H. L. Crane (F&VC&D) and staff and G. F. Gravatt (FP) were hosts to the meeting, which was attended by more than 100 growers from 17 states and Canada.

Of considerable interest were two papers by Dr. Harald Hammar of the Pecan Field Station, Albany, Ga., where the parent trees of the recently introduced varieties are growing. He has solved the problem of thinning out young chestnut rows by cutting the trees and treating the stumps with 2,4-D. The chemical kills the stumps readily, and also prevents sprouting, which is generally prolific and has been a persistent problem.

From Dr. Hammar's studies of harvesting and storage of chestnuts come recommendations that will be of practical value as the crop is developed commercially. Because chestnuts are about 70 percent starch and very low in oil, they present a storage problem quite different from that of all other edible tree nuts grown in this country. They dry out rapidly when stored in open containers and soon become hard and worthless. As a protection from drying and also from molds, some of which are soil-borne, the nuts should be gathered daily or at least every other day during the season. Dr. Hammar advises placing them in ventilated containers in cold storage at 33° F. immediately. He used 5-gallon lard cans with a small hole punched in the top.

The dominant factor in successful storage, however, appears to be the individual constitution or characteristic of the nut from various selections. The ultimate solution to the problem may be in finding and introducing selections known to have inherent quality of keeping well under proper storage conditions. Dr. Hammar has found some seedlings have nuts with excellent keeping qualities, others have inherently poor storage characteristics. The range in one pound samples from 165 seedling trees varied from 100 percent sound to over 80 percent spoiled during 7-months storage. The results show that it is almost impossible to keep some varieties from spoiling with the best of care.

Plant breeders in the Bureau are using two techniques--seedlings and topworking--to develop new varieties. Dr. John W. McKay (F&VC&D) told the group. Seedlings, grown as a source of new varieties, are topworked to hasten fruiting. The research shows that to produce a good new variety the parents must have in them the good qualities that are to be combined in the progeny. Dr. McKay says the fact that the plant breeder can perpetuate a valuable seedling endlessly by budding or grafting is a great help in working with plants that require so much time to develop.

Livestock Shelter Research Seminar

During the week of September 12 the Division of Farm Buildings and Rural Housing held a seminar on animal shelter and equipment research at Columbia, Mo., where the Psychroenergetic Laboratory is located. The conference, arranged by J. R. McCalmont, was attended by A. W. Turner, J. D. Long, and Farm Buildings and Rural Housing staff members from Beltsville, Illinois, Wisconsin, Missouri, Utah, and California. Eight states - Missouri, Minnesota, Virginia, Oklahoma, Kansas, Utah, Iowa and Michigan - were represented by experiment station workers. The University of Missouri cooperated and supplied a number of the speakers. During the meeting the group visited the Instrument Society of America's exhibit at the municipal auditorium in St. Louis. Subsequently attention was given on the conference program to the question of scientific instrumentation.

There are at least 24 current projects in animal shelter and equipment research, in half of which BPISAE agricultural engineers are cooperating. In addition to the Psychroenergetic Laboratory, these include the poultry calorimeter at Beltsville, the hog psychrometric chamber at Davis, California, beef cattle and hog summer cooling work at El Centro, California, poultry house ventilation in Connecticut, electric heating of pig shelters in Indiana and of bee hives in Wisconsin, dairy barn work in Wisconsin, Illinois, and Utah, feed handling equipment in Illinois, and construction material durability in Indiana. The conference suggested seven more projects needed to help round out a complete program.

Field men left the seminar with a coordinated approach to the work in livestock shelters and some very practical help on proper design of experimental projects, methods of operation, and critical evaluation of instrumentation and of results.

Recent Visitors

Ninety delegates to the United Nations Scientific Conference on Conservation and Utilization of Resources came by special train from Lake Success to spend a day at Beltsville, Sept. 12. Dr. P. V. Cardon, agricultural research administrator, explained the research program of the Department at luncheon at the log lodge. Dr. Robert M. Salter welcomed the group to Plant Industry Station where they saw a weed control demonstration by L. W. Kephart (CC&D) and a demonstration of the various responses of plants to growth regulating compounds by Dr. J. W. Mitchell (FVC&D).

A thorough briefing in soils research and recent findings was given Federal Extension workers in a program at Plant Industry Station, Sept. 14. Taking part were Dr. Frank Parker, Dr. R. Q. Parks, Dr. S. B. Hendricks, Dr. Charles E. Kellogg, Dr. Carlton Barnes, and Dr. L. W. Erdman.

Staff Members Confer with Visiting Britishers

Sir William Ogg, director of the Rothamsted Agricultural Experiment Station, visited Plant Industry Station in September following the United Nations Scientific Conference on Conservation and Utilization of Resources.

Speaking before a seminar, Sept. 16, Sir William described the work at Rothamsted and pointed out the similarities in problems and techniques with research in plants and soils in this country.

Dr. Alexander Muir, in charge of soil survey work in England and head of the pedology department at Rothamsted, accompanied Dr. Roy W. Simonson, Earl D. Fowler, and Walter H. Lyford (SS) and interested State soil scientists on a tour of New England following the Conference. They visited Aroostook county, Maine, and the New Hampshire and Connecticut Agricultural Experiment Stations.

Dr. Muir spoke to the staff at New Haven, Sept. 13. He believes that the soils of New England have much in common with those of Great Britain and that many of them can be directly coorelated with British soils.

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* PERSONNEL NOTES *
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Telford Resigns Post in Puerto Rico

Emery A. Telford (SM&I) has resigned his position as agronomist at Mayaguez, Puerto Rico to accept employment with a private concern in Haiti. Mr. Telford came to the Bureau in 1947 to conduct research in plant phases of the Research and Marketing project on erosion control and stable crop production in Puerto Rico. He was formerly with SCS.

Baker Assigned at Havre, Mont.

Lawrence O. Baker has been appointed as cooperative agent with the State of Montana to fill the vacancy created at Havre by the death of V. C. Hubbard. Mr. Baker, 27, was born in Burley, Idaho. He received a BS degree from Utah State College in 1948 and has worked this past year toward an MS. During the past year he has been research assistant in cereal investigations at the College.

Stephens to Succeed Allanson

Dr. Robert M. Salter, chief of the Bureau, has named Edmund Stephens to succeed Henry E. Allanson as assistant chief in charge of administration. Mr. Allanson plans to retire from active service, Nov. 30.

Mr. Stephens is well known in this Bureau as a former staff member, first as an agronomist and later as head of the budget section. He joined the Bureau as junior agronomist at Woodward, Okla., in 1930 shortly after receiving an MS from Oregon State where he had done his undergraduate work in agronomy. He transferred to the Office of the Director of Finance in 1935. Returning to the Bureau in 1941 he served for five years as head of the budget section. He was then made head of budget activities of the Research Administration, a post he held until 1948 when he became assistant chief in charge of administration for BEPQ.

Mr. Allanson's retirement will bring to a close 30 years of service in the Bureau. A native of Iowa, he came to the Department in 1911 as a clerk-stenographer in the office of Assistant Secretary B. T. Galloway. Three years later Mr. Allanson resigned to attend Cornell. There he earned his college expenses by working as secretary to Dr. Galloway, who had become dean of the College of Agriculture and director of the Experiment Station.

Mr. Allanson returned to the Department in 1917 following graduation from the Cornell College of Agriculture. He served from September 1918 to May 1919 as assistant to the director of the Virginia Extension Service. Then he joined the Bureau as a scientific assistant. He was promoted to assistant plant introducer in 1921 and shortly afterwards was named assistant in charge of business operations. He became assistant to the chief in 1923, an assistant chief of the Bureau in 1928. He held the post of business manager from 1934 to 1946 when he was named assistant chief in charge of administration.

RETIREMENTS

Dr. John I. Lauritzen (SPI) senior physiologist retired August 31 after more than 31 years of service in the Bureau. A native of Utah, he received a BS from Utah State College of Agriculture in 1914 and a Phd from Cornell University in 1919.

Coming to the Bureau in 1918, Dr. Laurentzen first worked on physiological and pathological problems relating to storage and keeping qualities of sweet potatoes and other root crops in the Office of Cotton and Truck Crop Investigations. Since 1930 Dr. Lauritzen has made similar studies of harvested sugarcane. The practical applications of his findings have resulted in the conservation of a larger proportion of perishable farm products during storage.

Dr. Laurentzen will make his home in Pasadena, Calif., where his son attends Cal Tech.

W. M. Osborn (SMI), superintendent of the Lawton, Okla. field station, retired August 31 after more than 38 years with the Bureau. Mr. Osborn was born on a farm near Waverly, Kansas, in 1885. Graduating from Kansas State Agricultural College in 1911, he was appointed an agent of the Bureau in the Division of Dry Land Agriculture and assigned to work at Akron, Colo. He served briefly at North Platte, Nebr., before going to the Lawton Field Station as superintendent in the spring of 1915.

Mr. Osborn has earned widespread recognition as an authority on crop production and soil management problems in the Southern Great Plains. He initiated studies that resulted in the accumulation of many basic facts on the biology of the chinch bug and the development of sorghum varieties resistant to this pest. He has exerted a strong influence in bringing about the use of varities of winter wheat, winter oats, and cotton adapted to the area. Mr. Osborn is continuing with the Bureau as a collaborator to complete summaries of a large quantity of experimental data.

Joseph W. McKericher (SS) retired September 30 after more than 48 years in the Department. He began his career as a student clerk in the Department library in 1901, went from there to the disbursing office, and transferred to the Division of Soil Survey in 1906.

Mr. McKericher was made chief draftsman in charge of the preparation of soil survey maps for publication in 1924. He has served successively as associate cartographer, cartographer, and senior cartographer. Since 1934 he has also served as administrative assistant to the chief of the Division. As cartographer Mr. McKericher was responsible for the preparation for publication of more than 700 soil maps. As administrative assistant he has been largely responsible for direction of a large field force of soil surveyors in such matters as assignments of personnel, purchases of equipment, maintenance of records covering areas survey, and preparation and publication of soil maps and reports.

DEATHS

Durward F. Fisher, since 1930 in charge of the Bureau's research on transportation and storage of fruits and vegetables, died of a heart attack September 18. He was 61.

A New Yorker, he graduated from Michigan State College in 1912 and received a Master of Horticulture degree from that institution in 1917. He joined the Bureau staff in 1912 and the next year was sent to Wenatchee, Wash., where for 17 years he was in charge of the U. S. Fruit Disease Laboratory. His work there covered a wide range of fruit production and handling problems. One of the most important was the successful removal of arsenic spray residue from apples. He also rendered noteworthy service in connection with the development of the now generally used method of packing apples in oiled paper to control apple storage scald.

In 1930 he was transferred to Washington, D. C. and placed in charge of the Bureau's fruit and vegetable handling, transportation and storage investigations. Subsequently market disease investigations of fruits and vegetables were added to the work.

In the 19 years Mr. Fisher directed these studies many valuable advances have been made in meeting the problems of maintaining quality and preventing spoilage loss in the marketing of fruits, vegetables, and florists' stocks. On the basis of principles that have been worked out, new and more effective methods have been devised, improved equipment has been developed, and the industries have been aided in many ways. Mr. Fisher combined a broad understanding of the industry problems with a scientific attitude toward their solution and administrative ability of high order. He maintained effective and cordial contacts with transportation officials, shippers and organizations of growers.

During the past year he had planned and put into operation a much broadened program of investigation under the Research and Marketing Act. He was the author of a number of scientific papers.

Mr. Fisher was a member of the American Society for Horticultural Sciences, the Botanical Society of Washington, Alpha Zeta national fraternity, Sigma Xi honor society, a counselor for the Society of Refrigeration Engineers, and a fellow of the American Association for the Advancement of Science.

He leaves his widow, Mrs. Alida Dearborn Fisher, a married daughter, and two sons.

PUBLICATIONS

Departmental

Farmers' Bulletin 1941 (rev.) - Grow Disease-Resistant Oats
Farmers' Bulletin 2009 - Storage of Small Grains and Shelled Corn on the Farm
Farmers' Bulletin 2010 - Storage of Ear Corn on the Farm
J.A.R. 1398 - Factors affecting the pathogenicity of the onion pink-root organism

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Brandes, E. W. Modern theories of sugarcane breeding. Sugar Jour., August 1949.

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Copeland, O. L., Jr. Some relations between soils and the littleleaf disease of pine. Jour. Forestry, July 1949.

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